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Leonardo Badino

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EXAMINER

ROBERTS, SHAUN A

ART UNIT

PAPER NUMBER

2626

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,849	Applicant(s) BADINO ET AL.	
	Examiner SHAUN ROBERTS	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to the communication filed 2/13/2011.

Response to Amendment

1. Claims 18 and 26 have been amended. Based on the amendments, the 112 rejection has been overcome.

Response to Arguments

2. Applicant's arguments filed 2/13/2011 have been fully considered but they are not persuasive.

Applicant argues that the limitation carrying out non-acoustic similarity tests between each phoneme of said phonemes of said second language being mapped and a set of candidate mapping phonemes of said first language, said similarity tests performing a comparison between said phonemes of said second language and said set of candidate phonemes based on at least one category, said at least one category being independent of said first language and said second language is not taught by the current prior art. Examiner respectfully disagrees.

Campbell teaches carrying out non-acoustic similarity tests between each phoneme of said phonemes of said second language being mapped and a set of candidate mapping phonemes of said first language, said similarity tests performing a comparison between said phonemes of said second language and said set of candidate phonemes based on at least one feature, said at least one feature being independent of said first language and said second language (Intro para.

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5: match the sounds of the target speech through the use of a mapping vector; 3.1; 3.2).

Campbell teaches a multi-stage process, teaching phoneme mapping, carrying out non-acoustic similarity tests, and then performs the next step (3.2 secondary stage of synthesis) of comparing characteristics of non-native and native speaker's speech, to further enhance synthesis.

Applicant's Page 3 Lines 14-25 of the Specification discuss the Campbell reference and explicitly states "the similarity is evaluated based on the phonetic-articulatory categories." The phonetic categories, defined according to the IPA standard, are language independent.

Applicant's Page 3 Lines 26-30 of the Specification further discusses and affirms Examiners previous arguments in the paragraph above about the multi-stage process.

Further, non-acoustic phoneme mapping using IPA is well known, see also:

Schultz "similarities of sounds are documented in international phonemic inventories like Sampa, Worldbet, or IPA, which classify sounds based on phonetic knowledge."

(Schultz, T. and Waibel, A. "Language Independent and Language Adaptive Large Vocabulary Speech Recognition." ICSLP, 1998.);

Iso-Sipila US 2005/0144003.

Claims 23, 31, and 20 and 28 are also rejected based on arguments presented above in reference to claim 18.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

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basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 18- 19, 21-22, 24- 27, 29-30, 32-34 are rejected under 35 U.S.C. 102(b) as being anticipated by CAMPBELL, "FOREIGN-LANGUAGE SPEECH SYNTHESIS", XP002285739, Proceedings of ESCA/COCOSD A Workshop on Speech Synthesis, pp. 177-180, (1998) (Applicant's admitted prior art- further referred to as Campbell).

Regarding claims 18 and 26 Campbell teaches a method and system (where the method of Campbell is inherently tied to a system for implementation) for text-to-speech conversion of a text in a first language comprising sections in at least one second language (Intro para. 3: pronounce the foreign words that appear in a multi-lingual text), comprising the steps of:

converting said sections in said second language into phonemes of said second language (2 Multi-Lingual Text para 4: produce a phonetic rendering of each utterance);

mapping at least part of said phonemes of said second language onto sets of phonemes of said first language (Intro para. 5: match the sounds of the target speech through the use of a mapping vector; 3.1);

including said sets of phonemes of said first language resulting from said mapping in the stream of phonemes of said first language representative of said text to produce a resulting stream of phonemes; and

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generating a speech signal from said resulting stream of phonemes (3.1 Phone Mapping; Intro para. 3: pronounce the foreign words that appear in a multi-*lingual text...synthesizing email or...pages...*),

wherein said step of mapping comprises: carrying out non-acoustic similarity tests between each phoneme of said phonemes of said second language being mapped and a set of candidate mapping phonemes of said first language, said similarity test performing a comparison between said phonemes of said second language and said set of candidate phonemes based on at least one category, said at least one category being independent of said first language and said second language (Intro para. 5: match the sounds of the target speech through the use of a mapping vector; 3.1 Phone Mapping; 3.2.- where comparison is independent of language, allowing for mapping between any sets of languages);

assigning respective scores to the results of said tests; and mapping each said phoneme of said second language onto a set of mapping phonemes of said first language selected from said candidate mapping phonemes as a function of said scores (3.1, 3.2 – where it is further known to perform phoneme mapping by the use of scores to generate the best representation).

Campbell teaches a multi-stage process, teaching phoneme mapping, carrying out non-acoustic similarity tests, and then performs the next step (3.2 secondary stage of synthesis) of comparing characteristics of non-native and native speaker's speech, to further enhance synthesis.

Applicant's Page 3 Lines 14-25 of the Specification discusses the Campbell reference and explicitly states "the similarity is evaluated based on the phonetic-articulatory categories." The phonetic categories, defined according to the IPA standard, are language independent.

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Applicant's Page 3 Lines 26-30 of the Specification further discusses and affirms Examiners previous arguments in the paragraph above about the multi-stage process.

Regarding claims 19 and 27 Campbell teaches mapping said phoneme of said second language into a set of mapping phonemes of said first language selected from: a set of phonemes of said first language including three, two or one phonemes of said first language (Intro para. 5: match the sounds of the target speech through the use of a mapping vector; 3.1 phone Mapping—where segments and vectors can include multiple phonemes),

or an empty set, whereby no phoneme is included in said resulting stream for said phoneme in said second language.

Regarding claims 21 and 29 Campbell teaches representing said phonemes of said second language and said candidate mapping phonemes of said first language as phonetic category vectors, whereby a vector representative of phonetic categories of each said phoneme of said second language is subject to comparison with a set of phonetic category vectors representative of the phonetic categories of said candidate mapping phonemes in said first language (Intro para. 5: match the sounds of the target speech through the use of a mapping vector – where phonetic categories are well known in the art (based on the International Phonetic Alphabet by the International Phonetic Association), and when using phonemes some of these features are inherently (and have to be) used).

Regarding claims 22 and 30 Campbell teaches wherein said comparison is carried out on

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a category-to-category basis by allotting respective score values to said category-by-category comparisons, said respective score values being aggregated to generate said scores (3.1; 3.2 – where it is further known to perform phoneme mapping by the use of scores to generate the best representation, and where phonetic categories are well known in the art (based on the International Phonetic Alphabet by the International Phonetic Association), and when using phonemes some of these features are inherently (and have to be) used).

Regarding claims 24 and 32 Campbell teaches selecting said phonetic categories from the group of: (a) two basic categories of vowel and consonant; (b) a category diphthong; (c) vowel characteristics unstressed/stressed, non-syllabic, long, nasalized, rhoticized, or rounded; (d) vowel categories front, central, or back; (e) vowel categories close, close-close-mid, close-mid, mid, open-mid, open-open-mid, or open; (f) consonant mode categories plosive, nasal, trill, tapflap, fricative, lateral-fricative, approximant, lateral, or affricate; (g) consonant place categories bilabial, labiodental, dental, alveolar, postalveolar, retroflex, palatal, velar, uvular, pharyngeal, or glottal; and (h) other consonant categories voiced, long, syllabic, aspirated, unreleased, voiceless, or semiconsonant.

Where these are well known phonetic features/categories in the art (based on the International Phonetic Alphabet by the International Phonetic Association), and when using phonemes some of these features are inherently (and have to be) used. The known nature of these features is further shown in applicant's disclosure by the mention of the features based on the international standard (IPA) (Page 7 lines 25-26).

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Regarding claims 25 and 33 Campbell teaches the step of pronouncing said resulting stream of phonemes by means of a speaker voice of said first language (Abstract : rather than switch voices; Introduction para. 3: using the voice of the original speaker).

Regarding claim 34 Campbell teaches a non-transitory computer readable medium encoded with a computer program product loadable in a memory of at least one computer, the computer program product comprising software portions for performing the steps of the method of claim 18 (where based on the nature of the reference, this is inherently known. Further, the application of email and HTML further demonstrates the method being performed using such).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 23 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over CAMPBELL, "FOREIGN-LANGUAGE SPEECH SYNTHESIS", XP002285739, Proceedings of ESCA/COCOSD A Workshop on Speech Synthesis, pp. 177-180, (1998) (Applicant's admitted prior art- further referred to as Campbell).

Regarding claims 23 and 31 Campbell teaches allotting differentiated weights to said score values in aggregating said respective score values to generate said scores.

The claim merely mentions the use of weights. It would have been obvious to one of

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ordinary skill in the art to give weight to the scores to allow for the selection of the closest phoneme vector based on a particular characteristic that is deemed most important.

5. Claims 20 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over CAMPBELL, "FOREIGN-LANGUAGE SPEECH SYNTHESIS", XP002285739, Proceedings of ESCA/COCOSD A Workshop on Speech Synthesis, pp. 177-180, (1998) (Applicant's admitted prior art- further referred to as Campbell) in view of Jensen, K., Riis, S., and Morten Pedersen. "Multilingual Text-To-Phoneme mapping for Speaker Independent name Dialing in Mobile Terminals." RTO-MP-066, Sept 2001 (further referred to as Jensen).

Regarding claims 20 and 28 Campbell does not specifically teach wherein said step of mapping comprises: defining a threshold value for the results of said tests; and mapping onto said empty set of phonemes of said first language any phoneme of said second language for which any of said scores fails to reach said threshold value.

Jensen teaches multilingual text-to-phoneme mapping (3. Multilingual TTP Mapping) that incorporates scoring and a threshold (*Page 3 Col 1 para. 2: larger than the threshold...*). It would have been obvious to one of ordinary skill in the art at the time of the invention to not include phonemes that are not closely related based on a threshold to avoid the use of an incorrect pronunciation which could lead to numerous results, such as the section being incomprehensible.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHAUN ROBERTS whose telephone number is (571)270-7541. The examiner can normally be reached Mon - Fri 7-4 est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (571)272-7628. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. R./

Examiner, Art Unit 2626

/Talivaldis Ivars Smits/

Primary Examiner, Art Unit 2626

04/12/2011